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ABSTRACT

In recent years, the rapid development in International Joint Venture (IJV) has been a significant phenomenon under the global economy, especially in the developing countries. However, high failure rates and hence the huge investment risks make the promised advantages unpredictable. In this study, we explore the role of Enterprise System (ES) implementation in the journey of IJV development. We study the impacts of ES to IJV through a comparison study for their relationship that involves three scenarios: implementing ES prior to, parallel to, or after IJV operation. We then construct a generic framework for the optimal strategy based on findings from both ES and IJV literature. We also use a comparative case study approach to illustrate the value of this framework. We conclude our study with some discussions on possible extensions to innovation management as future research directions.

Keywords

Enterprise System Implementation, International Joint Venture, Global Operation, IS Investment

INTRODUCTION

In the past century, the rapid development in economy and technology has dramatically changed everything in the world. From industrial era to information era, the world is becoming smaller as a "village", and "global economy" is no longer only a terminology. In the business world, two important phenomena have been International Joint Venture (IJV) and Enterprise System (ES). While IJV has a longer history in the practice, ES only appears after the mid 80's (Davenport, 2000). Nevertheless, both of them have changed the way companies do business and their impacts will continue in the new millennium. In the academic world, research on both IJV and ES is growing rapidly in recent years. On the one hand, people are still confused at the paradoxes caused by opportunities in operational excellence and risks in failure. On the other hand, there is still lack of recognized theories to provide suitable guide for qualitative and quantitative analysis. So far, to our knowledge, there is no literature directly exploring the relationship between IJV development and ES implementation. Hence, it's our hope that this study can lead to some theoretical contributions to those topics.

Definitions

An IJV is a cross-border joint venture, where joint venture, according to Pfeffer and Nowark (1976), can be defined as "legally and economically distinct organizational entities created by two or more parent organizations that collectively invest capital and other resources to pursue certain strategic objectives". According to this definition, IJV is a kind of inter-organization structure that involves both foreign investors and host countries.

ES, also be called Enterprise Resource Planning (ERP) system, can be viewed as both a management philosophy and a software system (Jacobs and Bendoly, 2003). There are many definitions in the literature. In this study, we adopt Klaus, Rosemann and Gable's (2000) approach which defines ES from three different perspectives, as "a product in the form of computer software", as "a development objective of mapping all processes and data of an enterprise into a comprehensive integrative structure", and as "the key element of an infrastructure that delivers a solution to business".

Research Methodology

In this research, we use the induction approach to design a research framework based on findings from both IJV and ES literature. As the first step, we use a comparison study to explore the relationship between IJV development and ES implementation. Then, we consider the dynamics of the relationship by introducing different scenarios. Finally, we construct the research framework and use a comparative case study to illustrate the value of proposed framework.

As at this stage, empirical study is not the focus of the research, but will be important as the next step, we further discuss what needs to be considered for the study design based on findings from the case study. Traditionally, quantitative analysis methods like survey, as well as qualitative analysis methods like case study have been widely used in both IJV and ES literature. However, the case study approach is more suitable for research in the new area. By adopting in-depth, comparative case studies, we intend to provide more detail explanations for the relationship and offer the perspective of new insights into the connections among those latent variables (Glaser and Strauss, 1967; Yin, 1989).

LITERATURE REVIEW

Both IJV and ES research are interdisciplinary. In particular, IJV literature contains contributions from economics, business strategy, and organization behavior. And ES research has attracted attentions from many researchers in different management areas, like information systems and operations management from the beginning. So far, the most relevant research to our study is about implementing ES in the developing countries, with IJV being mentioned as a user group (Huang and Palvia, 2001).

For our study, we review IJV and ES literature separately, with a focus on the theme and methodology. Findings from the literature will be the cornerstone for constructing the research framework.

International Joint Venture

Theme

Most IJV studies focus on entry mode (e.g., Kogut and Singh, 1988; Agarwal and Ramaswami, 1992; Pan and Tse, 2000), control, performance, and their relationship (e.g., Woodcock, Beamish and Makino, 1994; Mjoen and Tallman, 1997; Luo, 2002). There are also related issues, like cross-culture, collaboration, and failure. Corresponding to the development of IJV, research in IJV can be divided into two stages: prior to 1995 is the first stage, and after 1995 the second stage. We extend our discussion for each stage as follows:

Stage One: although IJV has existed as early as 70's, the world political environment then tapped the development in IJV during the first stage. Hence, the focus of IJV research was entry mode (e.g., Kogut and Singh, 1988). And most sample data and case studies were limited to US and Japanese companies. Relationship between entry mode and performance was another major topic (e.g., Woodcock, Beamish and Makino, 1994).

Stage Two: with dramatic political changes in the early 90's, the world's biggest emerging economic regions open their doors for foreign investments. IJV developed rapidly during the second stage. Consequently, academic research in IJV began to explore a wider range of topics, like culture (e.g. Li, Lam and Qian, 2001), conflict (e.g., Lin and Germain, 1998), cooperation (e.g., Reuer and Koza, 2000), and learning (e.g., Tsang, 2002). Research applying results from the entry mode study for those new topics has been rather fruitful.

In the new millennium, more focused IJV research is emerging, like partner selection (e.g., Wong and Ellis, 2002), trust (e.g., Currall and Inkpen, 2002), failure (e.g., Dhanaraj and Beamish, 2003), and cross-culture (e.g., Hennart and Zeng, 2002). After ample preparations during the first stage, researchers are now more comfortable in using existing research framework and newly developed methods, like game theory, for their studies.

Methodology

There are several schools of thought in IJV research. One most commonly used approach is the transaction cost economics theory (Williamson, 1986). A second school uses strategic behavior and organizational learning theory to relate competitiveness under the market power with vehicle for the organizational knowledge exchange (Kogut, 1988). Cunning (1988) integrates various strands of international business theories for the eclectic paradigm with a focus on the importance of location-specific factors. Under his paradigm, equity based bargaining power and location based resource advantages play an important role in the IJV decision-making. Recently, several applications of game theory (Zhang and Rajagopalan, 2002) derived from principal agent theory used by authors earlier (Reuer and Miller, 1997) also appear in the literature.

Enterprise System

Theme

Based on the definition of ES, we can classify the ES literature into two streams: concept and system. The concept stream contains literature that promotes the dissemination of ES body of knowledge. The system stream, on the other hand, focuses

on the implementation of ES philosophy, system, and software. For general interests in ES, Davenport (2000) is a good introduction. For recent research in ES, Klaus et al. (2000), Jacobs and Bendoly (2003) all provide excellent reviews.

The system stream is more related to our study. Under this stream, we have seen recently a rapid growth in the literature with diverse topics. There are strategic issues, like culture impact and change management (e.g., Davison, 2002; Abdinnour-Helm, Lengnick-Hall and Lengnick-Hall, 2003), critical success factors (e.g., Bingi, Sharma and Godla, 1999; Al-Mashari, Al-Mudimigh and Zairi, 2003), and performance (e.g., Mabert, Soni and Venkataraman, 2001; Stratman and Roth, 2003). There are also issues critical to company's organization and operation, like adoption process (e.g., Markus, Axline, Petrie and Tanis, 2000), project management (e.g., Wood and Caldas, 2001), business integration (e.g., Newell, Huang, Galliers and Pan, 2003), and ES implementation under special situations (e.g., Huang and Palvia, 2001). Further, there are technical issues for ES as a software package, like software procurement (e.g., Sundarraj and Talluri, 2003), software maintenance (e.g., Hirt and Swanson, 2001), and system integration (e.g., Fan et al., 2000; Lee et al., 2003).

Methodology

As ES research is a relatively new area, most authors use conceptual models, case studies, or survey methods. It is interesting to note that many traditional methods for software implementation, like Kwon and Zmud's (1987) six-stage model for the technological diffusion approach, and Markus and Tanis' (2000) innovation process stage model are used by several authors to describe the ES adoption process.

RESEARCH FRAMEWORK

In this section, we construct the research framework based on findings from the literature. We first develop two conceptual models according to the scope and stage of related activities in both IJV development and ES implementation. We then use those two models for a comparison study and further integrate them into the research framework. We also analyze key elements in the framework for the purpose of designing next stage's empirical study.

Comparison Study

We follow Al-Mashari et al.'s (2003) taxonomy of ERP critical factors to define the scope model, and adopt Markus et al.'s (2000) stage model for the time-horizon consideration. We notice that one evident difference between IJV development and ES implementation is the characteristic of ES as a software system. Thus, our comparison study will focus on the "soft" side of those two phenomena.

Scope Model

The successful operation of a company depends on many factors. According to Porter (1985), the most important one is the integration of strategy, organization, process and technology. All critical success factors for both IJV development and ES implementation are related to those four key elements. We use Figure 1 to illustrate those factors and their relationships.

For strategic issues, we consider critical success factors. For IJV, bargaining power resulted from equity and location position, knowledge advantage, culture impact, and leadership are important; For ES, a comprehensive list may include all factors under the scope model. The important interface between strategy and process is performance, which has caught attentions from both IJV and ES researchers. However, for IJV, the focus is the relationship between either entry mode, or control and performance. While for ES, the paradox of productivity (Brynjolfsson, 1993) is the "eye of the lion". On the other hand, the interface between strategy and organization is business process re-engineering, which is becoming critical for most ES implementations and also a popular topic after Hammer (Hammer and Champy, 1993). However, for IJV, little research has been done so far under this paradigm.

For organizational issues, change management has been a topic for a long time. Both IJV and ES lead to organization innovation for the benefit of improved productivity. Yet, the focus of IJV is the relationship between investment partners and top management; while for ES, it is the relationship between end users and software systems. For the interface between organization and technology, adoption process for ES describes the shift from manual operation to process automation. For IJV, this means the adoption process of new standards, rules, and procedures.

For issues related to process, business integration is always the focus. For IJV, designing and improving new processes requires integration of processes from both parent companies. More importantly, new product development and market strategy models should always take the advantage of available resources. For ES, the successful operation of any new system depends on not only the software system itself, but also the integration with other systems like knowledge management, total quality management, product documentation management, and existing processes. Further, to implement the software

system, or in more generally, any technology innovation process, project management as the interface between process and technology will be the major enabler.

For technical issues, we consider system integration. For ES, the traditional topic is integration with other enterprise-wide software systems, like CAD/CAE/CAM or high-level decision support systems. However, this is usually not a topic for IJV unless technology innovations, like new product development and concurrent engineering, are under the consideration.

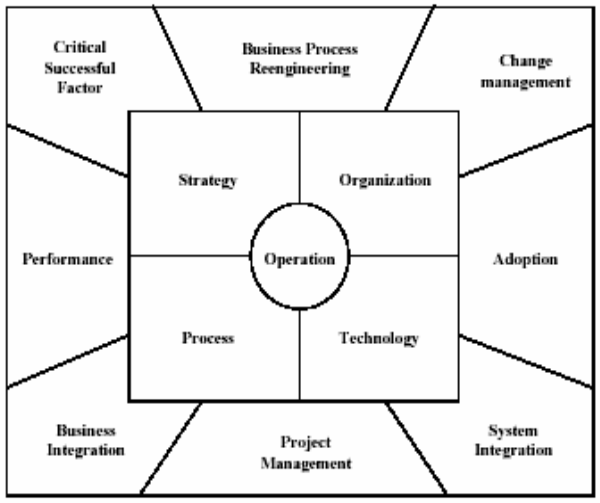

Figure 1 The Scope Model
(Adapted from Al-Mashari et al., 2003)

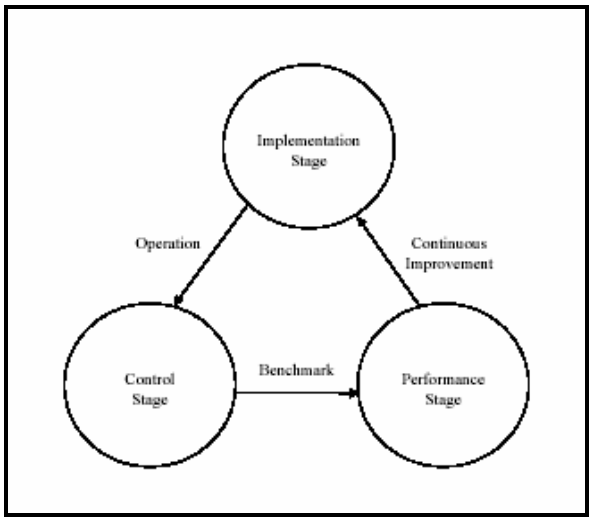

Figure 2 The Stage Model
(Adapted from Markus et al., 2000)

Stage Model

Markus et al. (2000) use a stage model which includes three phases: "project", "shakedown", and "onward and upward" phase to describe the adoption process of ES. This is similar to Kwon and Zmud's (1987) six-stage software implementation model: "Initiation", "Adoption", "adaptation", "Acceptance", "Performance (Satisfaction)", and "Incorporation" stage. For the convenience of our study, we simplify their considerations into a three-stage model: "Implementation", "Control", and "Performance" stage. We argue that since both IJV and ES belong to innovations in process and technology, they should have similar properties as the innovation diffusion process described in Kwon and Zmud's (1987) model. In the long run, the three-stage model can further be formulated as a closed loop management control system that includes feedback and continuous improvement mechanism. As describe in Figure 2, the three-stage model can catch the major activities around the time-horizon for both IJV development and ES implementation.

Research Framework

The integration of the scope and stage model leads to the research framework, which represents both the dynamic relationship between two phenomena and the whole picture of related activities, as shown in Figure 3.

To simplify the analysis, we consider here only the dynamic property under the first cycle of the closed loop. This is also near the actual situation, as both ES implementation and IJV development are the recent phenomena. The resulted framework thus provides us three scenarios as illustrated in the comparative case study.

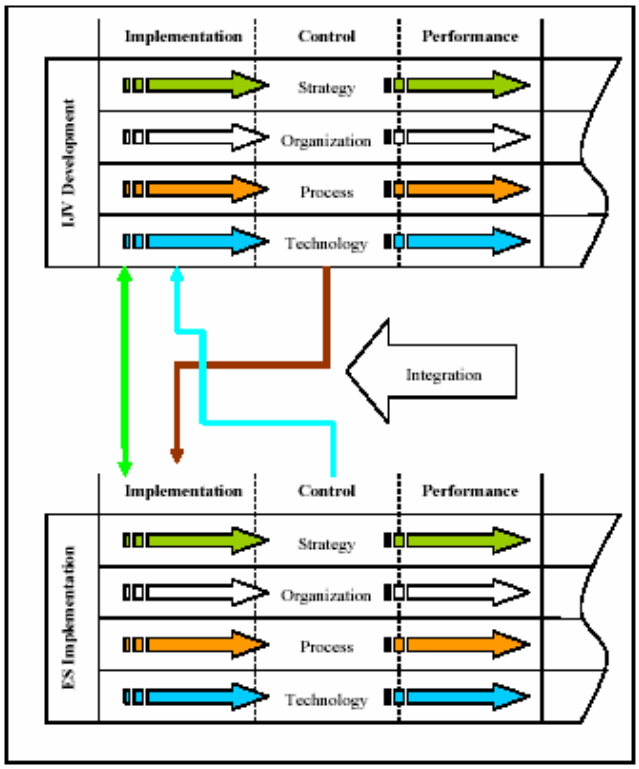

Figure 3 The Research Framework

CASE STUDY

During the 1990's, the author was working in China for several consulting firms as a consultant for both IJV development and ES implementation. Most clients were foreign invested joint ventures, or IJV as in this study. With this privilege, the author was able to access detailed information about those activities and prepared documentation according to the standard set by those consulting firms. Here, we choose three cases with different scenarios for our comparison study.

ES Implementation prior to IJV Operation

Company A is a large Sino-US joint venture producing power plant equipments. As a model state-owned enterprise for many years, Company A was almost a small society with all facilities for a nearby community, including health care, nursery, hotel, and education. After the adoption of open door policy, Company A established cooperation relationship with its business partner in US and sent almost all of its middle-level managers for related management trainings in US through an exchange training program. In 1996, Company A began its journey of IJV operation as a step toward its restructure objective.

Company A has used computer systems in its operations since the early 80s'. However, most systems were stand-alone systems developed by its Information Technology (IT) department. There were more than 100 system engineers in various business divisions, with the largest group in its engineering division providing system development and maintenance services for all other divisions. Company A began it ES implementation in 1994, shortly after it obtained software license from its business partner in US. The local management considered this as a kind of preparation for it future IJV operation. As to the end of 1997, the company finished the pilot implementation in Financial Accounting, Warehouse Management, and Purchasing functions using its own IT group with some technical assistance from its US partner. Due to the successful cooperation in the license production and ES implementation, Company A naturally chose its US partner as the partner for IJV, which was formally established in 1997 with a 51 to 49 share plan in favor of the local company.

With sole control under the local management for the ES implementation, there were no dramatic changes in either organization structure or processes. The local management then successfully implemented a downsize plan for its workforce from 6,500 to 4,000 through splitting its accessory facilities and maintain an independent business unit after the IJV

operation. For the ES implementation, the only loss for Company A was several key ES implementers after the implementation, as they were highly sought by the nearby IJVs for their ES implementations.

Overall, for Company A, both ES implementation and IJV development seem to be successful stories for the local management. For its US partner, as its initial objective was to enter the biggest market in the world, and don't need to invest money or take responsibility for the ES implementation, it was willing to provide all its supports to both activities. Further, it was also happy to operate the IJV using the same ES software from the very beginning. Thus, in this case, the successful ES implementation increased the local company's bargaining power and provided it a solid foundation in supporting company's further IJV development efforts.

ES Implementation parallel to IJV Operation

Company C is a newly established Sino-US IJV manufacturing automobile. With a total investment of more than 100 million US Dollar and a 50 to 50 share plan, both the local company and its US partner set the goal for this IJV to be the market leader in China. The IJV journey began in 1997, with brand-new manufacturing facility being built in a special economic development zone where favorable government policy for parts import and export was available. The ES implementation was planned as an important part of the IJV operation. After shopping for several local consulting companies, Company C decided to use its IT outsourcing company in US for the ES implementation to avoid possible interface issues between ES and its legacy system used in the manufacturing area.

Company C recruited all employees from the market and sent them for overseas training before starting their jobs. The ES implementation followed the prototype from its US parent company with its first phase in Financial Accounting, Material Management, and Purchasing functions, as well as a third party Customer Relationship Management solution.

With close cooperation between local and foreign managers in the top management team as well as strong support from the local government, the ES implementation was successfully accomplished in nine months and the first automobile was run out of the production line ahead of schedule in later 1998.

For Company C, both common sense of the top management for operation according to the industry best practice and support from the local government are important success factors. However, it should be noticed that in this case the huge market demand for its products makes the investment decision almost free of risks. Obviously, the newly-established facility and newly-recruited human resource also provided an excellent environment for the ES implementation, which, in turn, promised the successful operation of this new IJV.

ES Implementation after IJV Operation

Company E is an IJV in machine-making industry between a middle-size state-owned enterprise and a leading German company. The IJV was established in 1995 in local company's facility with a share plan of 51 to 49 in favor of the German partner. As the German partner was under the great pressure of its reengineering efforts in its European operation and also had an urgent intention to enter the "world's biggest market", it agreed to accept all employees in the local company for the new IJV during the negotiation. However, shortly after the IJV operation, many issues arose due to reasons like culture difference and lack of trusts. When the downsize plan to reduce the workforce from 1,700 to 600 became a major issue for the management, the German partner decided to adapt in IJV the management philosophy for its European operation, which was based strictly on rules and regulations. However, without understanding and cooperation from the local management, this was difficult as the IJV began to loss money instead of the profitable operation before the IJV operation.

Attempting to change the situation, the German partner further decided to invest additional money for ES. The local company had almost no integrated computer system except a customized accounting process system and several computer-added product testing systems. The new IT group was established within the Financial Department and an IT manager was recruited for the ES implementation.

The project began in 1996, and an ES implementation team that included managers and key users from each department was formed. Following suggestions from the global ES project manager in Germany, all team members accepted basic management training in a local education institution, and all IT group members were sent for related software training. Still, the implementation schedule was delayed due to issues in user support, external consulting, and financial planning.

As to the middle in 1997, ES was tested for several functions in the conference pilot but still not deployed to the user departments. At the same time, the foreign general manger resigned as a result of the IJV performance. When the new general manager came, he decided to focus on the routine operation first and thus informally discontinued the ES implementation. In this case, rush decisions from the foreign partner for both IJV development and ES implementation lead

to troubles in either activity. The IJV operation didn't provide any advantages for the ES implementation. Similarly, the issues in the IJV operation also become the important failure factors of the ES implementation.

Managerial Implications

From the case study, we observe the fact of possible relationships between two independent activities: IJV development and ES implementation. We summarize our major findings in Table 1.

Company	Structure (Share Plan)	IJV Stage	ES Stage	Major Findings
Company A	Sino-US (51:49)	Implementation	Control	• Large-size machine-making company. • Successful ES implementation with minimal structure change. • Local control.
Company C	Sino-US (50:50)	Implementation	Implementation	• Leading auto manufacturer. • New facility and organization. • Successful ES implementation as a part of the IJV development process. • Prototype ES implementation.
Company E	Sino-Germany (49:51)	Control	Implementation	• Large-size machine-making company. • ES implementation as a way to fix issues in the IJV operation. • Troubled ES implementation without strong support from the top management.

Table 1 Major Findings from Case Study

The findings from the case study provide some valuable insights for practical managers in making strategic, tactical, and operational decisions for those important activities. To master the complexity of those activities, it is important for managers to understand how to use tools and methods under the general framework of innovation management. Through deciding the right strategy for the sequence of IJV development and ES implementation and managing them properly, managers may use half efforts for double gains. However, the management should at the same time be aware of the fact before hand that the embracing of any new strategy, organization, process, or technology always means both opportunities and risks.

CONCLUSION

In this study, we explore the relationship between IJV development and ES implementation, which are both of vital importance to MNCs' global operation under the digital economy. As the first stage, we review the relevant literature, propose a research framework according to findings from the literature, and use a comparative case study approach for the detailed analysis. The exploration of the relationship between ES implementation and IJV development provides us not only valuable insights for the practice, but also some useful guidance for further theoretical exploration. However, at this stage, we recognize that for two sophisticated phenomena with a rapidly growing literature, our investigation is just a beginning. More instrument tools, like survey and statistical analysis, should be used to further justify the value of the proposed research framework. Also, the case study with cases from a small sample may have its bias for the interpretation. We hope that this could be remedied through next stage's empirical study and quantitative analysis.

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